REMARKS/ARGUMENTS

Claims 15-18 are pending in this application. Claims 1-14 have been canceled.

Applicant notes with appreciation the indicated allowability of the subject matter of claims 17 and 18.

Claims 15 and 16 were rejected for obviousness over Winter (4,077,251) in view of Moked (4,032,391).

Winter was viewed as disclosing to determine the viscosity of a liquid with a rotary pump as a function of the applied torque. It was acknowledged that Winter does not refer to any particular efficiency. However, Moked was relied upon as teaching the use of a gear pump to measure viscosity as a function of torque. The rejection was substantiated by noting that Moked provides a plurality of fluid conditions in Table I, and that some of the listed conditions represent peak performance of the gear pump while other columns (the last two) represent long-term steady state operating conditions, from which it was deduced that "the discharge pressure term (i.e. last three variables of Eqn (5)) is a lower value, which is suggestive that the Delta P value is low in comparison to the torque, suggestive of a relatively high friction (i.e. viscosity) device". On page 3 of the Office Action, it was again pointed out that "there are many fluid conditions (i.e. flow, speed, temperature) ... under which torque values are measured in Winter are also indicative of a lower Delta P (i.e. work output) in comparison with a higher torque, suggestive of a low efficiency device".

The present invention, as defined by independent claim 15, requires:

- providing a rotary pump
- operating the pump at less than half the maximum efficiency of the pump
- determining a torque required to operate the pump at the reduced efficiency
- determining the viscosity of the liquid from the torque applied to the pump.

Winter does not disclose a rotary pump. What Winter discloses is a viscosity measuring device that employs a typically cylindrical rotor (7) that may optionally be provided with geometry "to bring about additionally an axial flow through the flow gap .... Some examples of such geometries are given in illustration 3. The rotors shown provide, together with a plain external cylinder, a system of efficient delivery. Alternatively, delivery efficient geometries could be selected for the housing and be operated together with a profiled or plain rotor." (column 2, lines 56-65; underlining added). Neither a plain external cylinder, nor one with a profiled exterior (as shown in Fig. 3), is or can be a rotary pump, or a part of a rotary pump.

Winter discloses a rheometer for measuring viscosity as discussed in column 1, lines 15-24 and 29-30. In fact, in column 1, lines 37-39, Winter acknowledges that "Owing to its geometry, (in most cases, it is a plain cylinder), the rotor of the rheometer cannot deliver the material through the measuring gap." In contrast, and as is well known to those of ordinary skill in the art, a rotary pump could deliver copious amounts of the material through the measuring gap.

The fact that claim 15 is directed to determining the viscosity of liquids with a rotary pump is further important because the method recited in the claim permits the pump to be used as either a pump for transporting relatively large amounts of a liquid or for determining the viscosity of a liquid. This eliminates the need to have a separate viscosity measuring device, a most significant advantage that is not attainable with the viscosity metering device of Winter.

Thus, at most, Winter discloses a rheometer utilizing a plain cylinder. True, Winter states that the geometry of the rotor can be modified, if desired, to bring about some axial flow through the flow gap between the rotor and the surrounding housing. Whatever form Winter's rotor has, it is designed to provide "a system of efficient delivery" (column 2, lines 62-63; underlining added).

Thus, even agreeing for the sake of argument that Winter discloses a rotary pump, which applicant maintains is inappropriate, when the cylinder is geometrically modified to provide an axial flow, it is done to provide "efficient delivery".

In contrast, as stated above, independent claim 15 requires operating the pump at less than half its maximum efficiency. Winter contains no disclosure whatsoever to operate the pump at such low efficiency. To the contrary, Winter teaches to modify the cylinder so it provides "efficient delivery" as discussed above. Thus, if anything, Winter teaches away from operating the pump at 50% efficiency or less as recited in claim 1.

The Moked patent discloses a system for handling and compounding polymer compositions and as part of the system uses a gear pump. At the outset, it is noted that the present invention specifically seeks to eliminate problems encountered with, amongst others, gear pumps which have many disadvantages, as is discussed in paragraphs 0004 and 0005 of the Substitute Specification.

Assuming that Winter discloses the use of a rotary pump, with which applicant disagrees, the characteristics of rotary pumps are vastly different and incomparable with the characteristics of volumetric pumps such as the gear pump disclosed by Moked. Further, there is no suggestion in Moked that the gear pump disclosed therein could be used, and/or how it would have to be used, to determine the viscosity of liquids. In view thereof, one of ordinary skill in the art would not look to gear pumps, disclosed by Moked, for guidance in configuring a rotary pump so that it can be used to measure the viscosity of liquids. In fact, combining Winter with Moked is a hindsight reconstruction of the prior art using the disclosure of the present application as the guide how this might be accomplished, which cannot form the basis for rejection.

For these reasons alone, independent claim 15 is not obvious over Winter in view of Moked.

Further, the reasoning for relying on Moked to reject claim 15 for obviousness is based on the assumption that the efficiency of Moked's pump would be low simply because the

pressure difference generated by the pump is low in comparison with the torque. Torque and pressure differences are completely different quantities and, therefore, incomparable. The argument in the Office Action that a lower pressure difference (Delta P) in comparison with a higher torque is suggestive of a low efficiency device is erroneous. A pump may have a low pressure difference between its inlet and outlet, and a high throughflow rate. This is indicative that the pump operates at a high efficiency and demonstrates the point that, without considering the throughflow generated by the pump, it is impossible to make any statement concerning the efficiency of the pump based on any observed pressure difference between the inlet and the outlet of the pump.

The attempt to demonstrate that Table I of Moked somehow illustrates that the gear pump is operated at a low efficiency is additionally opposite to and fully contradicted by the patent itself. In column 7, lines 21-29, Moked states:

> From Table I, it will be noted that the FULL media space configuration, i.e. the least restricted inlet configuration, provided volumetric capacities which were essentially constant for the range of product tested. The gear pump of the present invention is essentially insensitive to viscosity and pressure conditions with respect to its pumping capacity, and its volumetric efficiencies are essentially 100% over a range of gear pitch line velocities up to 150 ft./min. (underlining added)

Indeed, Table I bears this out. The sixth line from the top shows that in all examples the efficiency is between 90% and 99%.

In contrast, claim 15 requires operating the pump at an efficiency "which is less than half the maximum efficiency of the pump", i.e. about half the efficiency at which the gear pump of Moked is operated.

Moked nowhere discloses or in any manner suggests to operate the gear pump at any time at a reduced efficiency, and in particular at a reduced efficiency of no more than 50% of the maximum efficiency. In this context, applicant notes that no part of Moked discusses or in any form suggests that operating the gear pump at a reduced efficiency is desirable or provides any benefit. Moreover, those of ordinary skill in the art know that one of the principal objectives

in configuring pumps is to maximize their efficiencies. Operating the pump at a much reduced efficiency, as required by claim 15, is the exact opposite to what one of ordinary skill in the art would seek to accomplish. The disclosure of Moked does not change this fact since Moked nowhere states or suggests to operate the gear pump at less than maximum efficiency. Indeed, this is reinforced by Moked itself, which, when addressing efficiency in a few places, stresses that this means maximum efficiency approaching 100%.

Thus, Moked does not disclose or suggest what is missing from Winter, namely to operate the pump at less than half its maximum efficiency for determining the viscosity of the liquid base or the torque required by the pump.

Accordingly, claim 15 is not obvious over Winter in view of Moked.

Claim 16 is allowable because it depends from allowable claim 15.

CONCLUSION

In view of the foregoing, applicant submits that all claims are in condition for allowance, and requests a formal notification thereof at an early date.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 576-0200.

Respectfully submitted,

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